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SUNOCO INC (R&M) MARCUS HOOK REFINERY

CORRECTIVE ACTION/FACILITY REMEDIATION

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Sun Company, Inc.
PO Box 426
Marcus Hook PA 19061-0426
610 859 1000

July 28, 1999

Mr. Steve O'Neil
Chief, Operations Section
Commonwealth of Pennsylvania
Department of Environmental Protection
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428

Re: **Sunoco, Inc. (R&M)**
Marcus Hook Refinery
Comprehensive Remedial Plan Quarterly Progress Report
Second Quarter 1999

Dear Mr. O'Neil:

This is the second quarter, 1999, progress report for Sunoco, Inc. (R&M) Marcus Hook Refinery Comprehensive Remedial Plan submitted to the Pennsylvania Department of Environmental Protection ("PaDEP") on September 29, 1994, and revised on May 18, 1995. Unless otherwise noted, this report covers work completed as of June 30, 1999.

Area 1 - No. 2 Dock

RW-8 was operational throughout this quarter. As a result, roughly 301,580 gallons of groundwater and approximately 59 gallons of NAPL were recovered. No NAPL was observed in nearby down gradient monitoring wells, MW-35, MW-36, or and MW-37, previously known as RW-1.

Area 2 - Refinery Laboratory

The refinery lab system had some operational difficulties during the quarter. The NAPL flow meter did not operate properly on RW5 during the reporting period, and RW-6 had problems with the water flow meter. New ground water pumps and flow meters were installed where needed and the system is now operating properly. The NAPL flow meter located prior to the NAPL holding tank recorded recovery of 898 gallons. Because the NAPL holding tank can

not be gauged, and the flow meter can not differentiate between water and NAPL, the 898 gallons should be considered a combination of water and NAPL. In addition, product was purged monthly from the various Area 2 NAPL bearing wells; MW-31, MW-32, MW-33, MW-80, MW-81, MW-82, MW-95, MW-97, MW-134 and MW-135, for an additional recovery of 207 gallons of NAPL.

Area 3 - West of Green Street

The passive recovery trench system operated throughout the quarter, recovering roughly 636 gallons of NAPL from SP-4A, P-4, SS-1A, S-4, S-5 and P-3.

Area 4 - Hewes Avenue and Amtrak Railroad

During this quarter, a slight sheen was observed intermittently during visual monitoring of the storm sewers and swales in the area. MW-94 was gauged monthly with no NAPL observed, therefore no recovery is reported for this quarter.

Area 5 - Middle Creek

The recovery system RW-10, located along the north bank of Middle Creek, recovered 220 gallons of NAPL this quarter and required a new groundwater flow meter which was installed June 17th. Due to this operating problem no groundwater was recovered from RW-10. RW-11, the southern recovery well in this area, operated throughout this quarter recovering approximately 50 gallons of NAPL and 59,300 gallons of groundwater. Approximately 22 gallons of NAPL was also recovered from MW-110 (the pneumatic NAPL only recovery system).

Area 6 - Lube Oil Tank Field

During this period the NAPL flow meter recorded 93,429 gallons from RW-9. Because the holding tank can not be gauged and the flow meter can not differentiate between water and NAPL, the 93,429 gallons should be considered a combination of water and NAPL. As a result of the failure of the NAPL totalizer, the NAPL recovered by this system has been estimated based on the frequency of emptying the 7,000-gallon NAPL container. Roughly 775,450 gallons of groundwater were recovered this quarter from RW-9. Approximately 12 gallons of NAPL was recovered from MW-89.

Area 7 - Hewes Avenue and Post Road

No NAPL was observed in RW-3 throughout this quarter, however, monthly vacuuming recovered an estimated 17 gallons of NAPL from RW-4, MW-76, and MW-77 during this period.

Area 8 - Well 45 Area

NAPL recovery was conducted with passive bailers in MW-45 and MW-83, and sorbent wicks in MW-44, MW-78 and MW-84; NAPL was not detected in MW-85. Estimated NAPL recovery for the Second Quarter of 1999 is 3 gallons.

Area 9 - Phillips Island

The NAPL bearing wells were gauged and evacuated with a vacuum truck bi-weekly during this quarter with roughly 148 gallons of NAPL recovered. In addition, the pneumatic NAPL skimmer pump in MW-117 recovered roughly 28 gallons of NAPL. The pneumatic product only recovery system, located in the west shore sump, was non-operational throughout the quarter.

Area 10 - No. 2 Tank Farm

The north and south total fluid recovery trench systems operated throughout this quarter recovering approximately 144,700 gallons of total fluids (groundwater and NAPL).

Summary

Overall, the Comprehensive Remedial Plan first quarter, 1999, NAPL recovery systems recovered roughly 1,402 gallons of NAPL. If you have any questions relating to this quarterly report, please call me at (610) 859-6297.

Sincerely,

Roseann Aloi
Environmental Specialist
Sunoco, Inc. (R&M)

cc: Mr. Eric Trinkle
Delaware Department of Natural Resources
and Environmental Control
Hazardous Waste Management Branch
P.O. Box 1401
89 Kings Highway
Dover, DE 19903

Mr. Stephen Hon Lee
PA/DE Permit Section
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Attachment 1

Sunoco Marcus Hook Refinery
Comprehensive Remedial Plan
Quarterly Progress Report
Second Quarter 1999

Biannual Groundwater Gauging Event, 13 & 14 April 1999
Sunoco Marcus Hook Refinery and No. 2 Tank Farm

Handex of Maryland, Inc.
July 12, 1999

TABLE OF CONTENTS

QUARTERLY MONITORING PROGRAM STATUS REPORT

APRIL 1999 THROUGH JUNE 1999

1.0 INTRODUCTION

Handex of Maryland, Inc. (Handex) prepared this quarterly status report for Sunoco, Inc. (R&M) to summarize the monitoring program at the Marcus Hook Refinery and the #2 Tank Farm (Figure 1). The Marcus Hook Refinery is situated on the west bank of the Delaware River at the Delaware-Pennsylvania border (Figures 2 and 3). The #2 Tank Farm is located approximately two miles north of the Marcus Hook Refinery (Figure 4).

The monitoring program consists of semi-annual ground water gauging and annual ground water sampling. Semi-annual gauging of all wells and annual ground water sampling of thirteen perimeter monitoring wells was proposed by Sun in the Addendum and Revision to the Comprehensive Remedial Plan dated May 19, 1995. The sampling plan was subsequently approved by PADEP in correspondence dated June 29, 1995. The Comprehensive Remedial Plan (CRP) was submitted by Sun on September 29, 1994. The purpose of the well gauging is to identify the presence of NAPL and determine ground water flow patterns. The purpose of the annual ground water sampling event is to evaluate concentration trends at the perimeter of the refinery and compare the results with historical ground water sampling events.

2.0 MONITORING PROGRAM

2.1 WELL GAUGING

2.1.1 Methodology

All of the wells at the Marcus Hook Refinery and the #2 Tank Farm are gauged for fluid levels on a semi-annual schedule (April and October). On April 13 and 14, 1999, 175 wells including 18 recovery wells were gauged as part of the semi-annual gauging event. Liquid level measurements were recorded with an interface probe capable of distinguishing between water and NAPL at an accuracy of 0.01 feet.

The depth ground water and NAPL measurements were referenced to surveyed points at the top of each well casing allowing for calculation of ground water and NAPL elevations. Some wells do not have a top of casing elevation; therefore, ground water elevation data cannot be calculated. A corrected ground water elevation was calculated for the wells containing NAPL by converting the NAPL thickness to an equivalent water column based on the specific gravity of the NAPL. The gauging data are summarized in Appendices K through M. The monitoring results for the refinery property, Area 3 and Area 10 are discussed in the following paragraphs.

2.1.2 Results

A total of 174 wells were gauged at the Marcus Hook Refinery property on April 13 and 14, 1999. Gauging data, a contoured ground water elevation map and a NAPL thickness map are attached in Appendix K. The contoured ground water elevation map shows ground water flow generally to the south towards the Delaware River at an approximate hydraulic gradient of 0.014 feet per foot (ft/ft). The ground water map shows localized mounds at wells 53, 117 and 118, and localized depressions at some of the ground water pumping wells. NAPL at an apparent thickness greater than or equal to 0.01 feet were detected in 74 wells at apparent thicknesses ranging from 0.01 to 16.09 feet.

A total of 31 wells were gauged at Area 3 on April 14, 1999. Gauging data, a contoured ground water elevation map and a NAPL thickness map are attached in Appendix L. The contoured ground water elevation map shows ground water flow generally to the south and east at an approximate hydraulic gradient ranging from 0.025 to 0.167 feet per foot (ft/ft). Localized ground water mounding is evident at TS-2 where surface water infiltration may occur due to the absence of paving. A localized ground water depression is evident at MW-124. NAPL at an apparent thickness greater than or equal to 0.01 feet were detected in 20 wells at apparent thicknesses ranging from 0.02 to 2.72 feet.

A total of 26 wells were gauged at Area 10 on April 14, 1999. Gauging data, a contoured ground water elevation map and a NAPL thickness map are attached in Appendix M. MW-103-1 and MW-103-2 were dry. The contoured ground water elevation map shows ground water flow generally to the east towards Barr's Run at an approximate hydraulic gradient of 0.020 feet per foot (ft/ft). NAPL at an apparent thickness greater than or equal to 0.01 feet were detected in 4 wells at apparent thicknesses ranging from 1.61 to 3.08 feet.

2.2 GROUND WATER SAMPLING

The annual ground water sampling program commenced in December 1995. Currently, ground water samples are collected in October from eleven perimeter wells at the Marcus Hook Refinery and two hydraulically downgradient wells at #2 Tank Farm. The samples are submitted for analysis of a reduced list of the Modified Skinner List parameters.